



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/923,789	08/08/2001	Craig Weldon	051481-5074	9874

9629 7590 03/23/2004

MORGAN LEWIS & BOCKIUS LLP  
1111 PENNSYLVANIA AVENUE NW  
WASHINGTON, DC 20004

EXAMINER

KRISHNAMURTHY, RAMESH

ART UNIT	PAPER NUMBER
----------	--------------

3753

DATE MAILED: 03/23/2004

13

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/923,789

Applicant(s)

WELDON ET AL.

Examiner

Ramesh Krishnamurthy

Art Unit

3753

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 January 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 2, 4 - 18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 11-15 is/are allowed.
- 6) ☒ Claim(s) 2, 4 - 10 & 16-18 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 January 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |  |
|---|--|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)  | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. <u>13</u> . |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                    | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)                              |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____.  |

This office action is responsive to amendment filed 01/07/04.

**Claims 2 and 4 – 18 are pending.**

1. The drawings are objected to because of the defects listed on the attached PTO-948 form. A proposed drawing correction or corrected drawings are required in reply to the Office action to avoid abandonment of the application. The objection to the drawings will not be held in abeyance.

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 4 –10 and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al. (US 5,259,355) in view of Cook et al. (US 5,579,741) and further in view of Cook (US 5,267,470).

Nakashima et al. discloses (figs. 1, 2) a device (12, 22) for controlling the fluid flow between an evaporative emission space of a fuel tank (7) and a fuel vapor collection canister (37), the device comprising:

A housing (12, 22) having a body portion (22) and a cover portion (12), the body portion including a first port (17), a second port (at the location opening into pipe (36)), and a fluid flow path extending between the first and second ports, the first port (17) being adapted to receiving fluid flow from the evaporative emission space and being at a first pressure level, and the second port (at the location opening into pipe (36)) being adapted for supplying fluid flow to the vapor collection canister (37) via pipe (36) and being at a second pressure level (because of the pressure drop near the valve element (23));

A valve (23) movable along an axis with respect to the housing (12, 22) between a first configuration (open, Col. 5, lines 9, 10) and a second configuration (closed, Col. 4, lines 62 - 63) with an intermediate configuration (intermediate between open and closed) being inherent;

An electric actuator (25) being disposed within the housing (22) and operatively coupled to the valve element (23);

An electric transducer (14, 19, 20) being disposed within the housing (12) and in fluid communication with the fluid flow path, the electric transducer (14, 19, 20) sensing the first pressure level with the electric transducer (14, 19, 20) providing a first electric signal used in controlling the electrical actuator (25) (Col. 4, line 63 – Col. 5, line 10);  
and

An electrical connector being disposed on the housing (See fig. 1 that shows electrical communication between elements (20, 22) and the controller (44)), the electrical connector including a first set of terminals in electrical communication with the electrical actuator (25) (located in the housing (22)) and including a second set of terminals in electrical communication with the electrical transducer (14, 19, 20).

The patent to Nakashima et al. ('355) discloses the claimed invention with the exception of disclosing a seal at an interface between the housing and the valve, the seal including an annular lip projecting obliquely with respect to the axis in the first configuration of the valve.

Cook et al. ('741) discloses (Figs. 1 – 3) a seal element (32) located at an interface between a valve element (30) and the housing (12), with the seal having annular lip (38) projecting obliquely with respect to an axis, so that the seal functions as an impact absorber and reduces noise upon impacting of the seal with the valve seat (Col. 4, lines 50 – 54).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the valve member (23) of Nakashima et al. with a seal (32) of Cook et al. ('741) for the purpose of providing shock absorption as well as noise attenuation as recognized by Cook et al. ('741).

The combination of Nakashima et al. and Cook et al. ('741) discloses the claimed invention with the exception of disclosing the first pressure level sensed to be a negative pressure relative to the ambient.

Cook ('470) discloses a pressure sensor (Col. 3, lines 44 – 51) that measures both negative and positive pressures relative to the ambient for the purpose of allowing the performance of diagnostic testing pertaining to leak-tightness of the system.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in the device according to the combination of Nakshima et al. and Cook et al. ('741) a pressure sensor that measures both negative and positive pressures relative to the ambient for the purpose of allowing the performance of diagnostic testing pertaining to leak-tightness of the system, as recognized by Cook ('470).

Regarding claim 4, it is noted that the electrical signal from the transducer (14, 19, 20) is a feed back signal comprising the level of pressure within the evaporative emission space of the tank.

Regarding claim 6, it is noted that Cook ('470) discloses the electrical transducer to provide a signal to indicate a rollover condition of the tank.

Regarding claims 7 and 8, it is noted that provision of a particular signal to a first or second subset of terminals or having a terminal common to a set of terminals are design expedients over those features disclosed in the combination set forth above, in that they neither solve any stated problem, nor provide any new or unexpected results.

Regarding claim 9, it is noted that the electrical actuator (25) is indeed a solenoid.

Regarding claim 10, it is noted that the seal in the combination of Nakashima et al.-Cook et al. ('741)-Cook ('470), corresponds to the seal (32) in Cook et al. ('741) that

comprises a hollow frustum including an inner surface and an outer surface with a tip (in (38)) disposed between the inner surface and the outer surface, the inner surface being in fluid communication with the first port (17) when the tip contacts the housing (22), and the outer surface being in fluid communication with the second port (at the location opening into pipe (36)) when the tip contacts the housing.

Regarding claim 16, it is noted that the seal (as discussed above in relation to claim 10) inherently deforms to any pressure in the tank side that is lower than that in the canister side. Also such a deformation leads to a slight opening of the port i.e. intermediate configuration, to the extent that the seal is deformed and thus the ensuing flow would be less than that corresponding to the fully open state of the valve.

5. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over the combination of Nakashima et al. (US 5,259,355), Cook et al. (US 5,579,741) and Cook (US 5,267,740) as applied to claims 4 –10 and 16 and further in view of Cook et al. (US 5,5803,056).

Nakashima et al. ('355) discloses the invention claimed with the exception of disclosing a third terminal in common electrical connection with both the electric actuator and the transducer. Nakashima et al. ('355) discloses (fig. 1) two terminals one each from the sensor unit (20) and the actuator (25) in the valve (22).

Cook et al. ('056) discloses a third terminal (96) in common electrical communication with both the electric actuator (62) via leads (94) and the electric transducer (86) via leads (92), so as to provide a compact electrical connection between

the transducer/actuator and the engine control unit (i.e. engine management computer) (Col. 4, line 60 – Col. 5, line 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided in the combination of Nakashima et al. ('355) and Cook et al. ('741) a third terminal in common electrical communication with the transducer and the actuator for the purpose of providing a compact electrical connection between the transducer/actuator and the engine control unit, as recognized by Cook et al. ('056).

6. Claim 17 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakashima et al. (US 5,259,355) in view of Cook et al. (US 5,579,741) and further in view of Cook et al. (US 5,5803,056).

Nakashima et al. ('355) discloses (figs. 1, 2) a method (Col. 3, lines 4 – 55 & Col. 4, lines 52 – 55) for connecting a device (12, 22) for controlling the fluid flow between an evaporative emission space of a fuel tank (7) and a fuel vapor canister (37), the fuel tank (7) and the canister (37) being mounted on a vehicle including fluid conduits (36, 39, etc.) and an electric wiring harness (connecting the various electrically operated devices to the control circuit (44)), the method comprising:

Mounting a housing of the device on the vehicle;

Establishing a first fluid communication path (via (17)) (see fig. 2) between the device (12, 22) and the evaporative emission space of the fuel tank (7);

Establishing a second fluid connection between the device (12, 22) and the fuel vapor canister (37) via the pipe (36); and



Establishing an electrical connection (see fig. 1) between the wiring harness (associated with the control unit (44)) and both of a valve actuator (25) and a pressure transducer (14, 19, 20) (the regulator is being read here as a transducer to be consistent with the specification) that are commonly disposed within the housing (12, 22) of the device.

The patent to Nakashima et al. ('355) discloses the claimed invention with the exception of disclosing a deformable seal at an interface between the housing and the valve.

Cook et al. ('741) discloses (Figs. 1 – 3) a deformable seal element (32) located at an interface between a valve element (30) and the housing (12), with the seal having annular lip (38) projecting obliquely with respect to an axis, so that the seal functions as an impact absorber and reduces noise upon impacting of the seal with the valve seat (Col. 4, lines 50 – 54).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided the valve member (23) of Nakashima et al. with a seal (32) of Cook et al. ('741) for the purpose of providing shock absorption as well as noise attenuation as recognized by Cook et al. ('741).

The combination of Nakashima et al. ('355) and Cook et al. ('741) discloses the invention claimed with the exception of disclosing a single electrical connection between the wiring harness and the actuator/transducer. Nakashima et al. ('355) discloses (fig. 1) two terminals one each from the sensor unit (20) and the actuator (25) in the valve (22).

Cook et al. ('056) discloses a single terminal (96) in common electrical communication with both the electric actuator (62) via leads (94) and the electric transducer (86) via leads (92), so as to provide a single electrical connection for the purpose of simplifying the electrical connection between the transducer/actuator and the engine control unit (i.e. engine management computer) via a wire harness (Col. 4, line 60 – Col. 5, line 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a single electrical connection in the Nakashima et al. ('355) - Cook et al. ('741) combination, between the transducer/actuator and the engine control unit (i.e. engine management computer) via a wire harness for the purpose of simplifying the electrical connection between the transducer/actuator and the engine control unit, as recognized by Cook et al. ('056).

7. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nakajima et al. (US 5,211,151) and Cook et al. (5,803,056).

Nakajima et al. discloses a device having a housing (3) connected between the fuel tank (via (3a)) and the vapor canister (via (3b)), the device establishing a first fluid communication (with the valve (8) being open) with the fuel tank via a restricted opening i.e. orifice (8b) in a first valve element (7) and a second valve element (8) spaced from the first valve element (7);

Establishing a second fluid communication path (with the valve (7) being open) between the device and the canister, the second fluid communication providing substantially unrestricted flow.

Nakajima discloses a valve actuator (12a).

Nakajima et al. discloses the claimed invention with the exception of disclosing a single electrical connection between wiring harness and both of a valve actuator and a pressure transducer disposed in the housing of the device.

Cook et al. ('056) discloses a single terminal (96) in common electrical communication with both the electric actuator (62) via leads (94) and the electric transducer (86) via leads (92), so as to provide a single electrical connection for the purpose of simplifying the electrical connection between the transducer/actuator and the engine control unit (i.e. engine management computer) via a wire harness (Col. 4, line 60 – Col. 5, line 2).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided a single electrical connection in the Nakajima et al. ('151), between transducer/actuator and the engine control unit (i.e. engine management computer) via a wire harness for the purpose of simplifying the electrical connection between the transducer/actuator and the engine control unit, as recognized by Cook et al. ('056).

It is clear that the combination of Nakajima et al. and Cook et al. ('056) includes an electrical pressure transducer since Cook et al. ('056) discloses such a transducer (86) allowing the sensed value of pressure to be conveyed to the engine management computer.

8. Claims 11 – 15 are allowed.

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

### ***Response to Arguments***

Applicant's arguments filed 01/07/04 have been fully considered but they are not persuasive. Applicant is arguing that Nakashima et al. ('355) does not disclose the electrical connector including the two sets of terminals one connected to the actuator and the other to the transducer. In response, it is noted that Nakashima et al. does disclose (Fig. 1) two sets of terminals one of which is connected to the transducer disposed in (12) and the other set being connected to the actuator disposed in (22). However, Cook et al. ('056) discloses a single terminal (96) in common electrical communication with both the electric actuator (62) via leads (94) and the electric transducer (86) via leads (92), so as to provide a single electrical connection for the purpose of simplifying the electrical connection between the transducer/actuator and the

engine control unit (i.e. engine management computer) via a wire harness (Col. 4, line 60 – Col. 5, line 2). Furthermore, in Cook et al. ('056) the transducer is housed in the cover portion and the actuator is housed in the body portion. Thus, the combination of Nakashima et al. and Cook et al. ('056) in the rejection set forth above for claims 4 – 10 and 16 is proper.

Regarding the arguments in relation to rejection of claim 17, the applicant is arguing that the combination of Nakashima et al. and Cook et al. ('056) for its teaching of the use of a single terminal would somehow make the device of Nakashima et al. unworkable because the communication space (21) in Nakashima et al. would preclude the single electrical connection. In response it is noted that establishing a terminal in electrical communication with both the transducer and the actuator is not precluded by the presence of the communication space (21) in Nakashima et al., since electrical connection does not have to be routed via the space (21). Furthermore provision of a single terminal does provide for compact electrical connection as evident from Cook et al. ('056).

Regarding the arguments in relation to rejection of claim 18, the applicant is arguing that Nakajima et al. ('151) lacks a transducer. However, it is clear that the combination of Nakajima et al. and Cook et al. ('056) does disclose an electrical pressure transducer since Cook et al. ('056) discloses such a transducer (86) allowing the sensed value of pressure to be conveyed to the engine management computer.

In view of the response set forth above, it is concluded that the rejections set forth herein are proper.

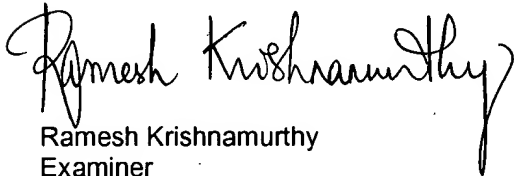
Art Unit: 3753

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramesh Krishnamurthy whose telephone number is (703) 305 - 5295. The examiner can normally be reached on Monday - Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David A. Scherbel, can be reached on (703) 308 - 1272. The fax phone number for the organization where this application or proceeding is assigned is (703) 872 - 9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308 - 0861.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Ramesh Krishnamurthy  
Examiner  
Art Unit 3753